



July XX, 2014

Ms. Diane McDaniel  
Department of Environmental Protection  
Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh, PA 15222

Mr. John Herman  
Department of Environmental Protection  
Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh, PA 15222

Griff Miller  
Remedial Project Manager  
RCRA Corrective Action (3LC30)  
USEPA Region 3  
1650 Arch St  
Philadelphia PA 19103-2029

Re: Disposal Area Delineation  
Former Lyondell Beaver Valley Site  
Lyondell Environmental Custodial Trust  
Potter Township, Pennsylvania

Dear Ms. McDaniel:

On behalf of the Lyondell Environmental Custodial Trust (Trust), Tetra Tech Inc. (Tetra Tech) has prepared this letter report to summarize the findings of the desktop evaluation to delineate the disposal areas at the Former Lyondell Beaver Valley Site, Potter Township, Pennsylvania. Tetra Tech worked closely with Mr. Griff Miller, USEPA, in developing the extent of each disposal area. Figure 1 gives a general site layout.

Below is a summary of the rationale used and what documentation was used in determining the location of each disposal area.

### **East Landfill**

After reviewing the aerial photographs of the area supplied by USEPA, it appeared the East Landfill disposal area was one large area that occupied three-quarters of the East Landfill. To confirm the location of the disposal areas, boring logs, historic maps, and other aerial photographs from the site were reviewed. Based on boring logs SB-1 and EL-15 and cross-section A-A (Wehran EnviroTech), there are two separate disposal areas in the East Landfill. Borings SB-1 and EL-15 had no waste identified in the borings. These two borings located near

the center of the East Landfill, seem to separate the two disposal areas (one to the west/southwest and one to the east). Also based on historic aerial photographs, it appears that a haul road was also in the center of the site during the operation of the disposal locations. Soil boring EL-13 and MW-3 also had no waste identified. These two locations aided in determining the north/northwest extent of the disposal areas. The larger disposal area is located on the west/southwest portion of the property and is 12.21 acres. The smaller disposal area is on the eastern portion of the East Landfill and is 6.99 acres.

Figure 2 depicts the location of the East Landfill disposal areas. Table 1 gives latitude and longitude coordinates of several locations along the boundary of the disposal area.

These disposal areas were developed by using the following documentation:

- 1951 Aerial Photograph, supplied by USEPA
- 1982 Aerial Photograph, supplied by USEPA
- 1952 Aerial Photograph, supplied by EDR
- 1967 Aerial Photograph, supplied by EDR
- 1987 Aerial Photograph, supplied by EDR
- Site Map With Cross Section Locations – Wehran EnviroTech
- Geologic Cross Section A-A – Wehran EnviroTech
- Geologic Cross Section B-B – Wehran EnviroTech
- Boring logs from the site investigation

The above documentation is included in Attachment 1.

### **Raccoon Creek**

After reviewing the Raccoon Creek Topographic Map (Applied Hydrology) the location of the Raccoon Creek disposal area is in the southwest portion of the Raccoon Creek Area. The location of the disposal area was confirmed by reviewing several historic aerial photographs. The approximate size of the West Landfill is 2.14 acres.

Figure 3 depicts the location of the Raccoon Creek disposal area. Table 2 gives latitude and longitude coordinates of several locations along the boundary of the disposal area.

This disposal area was developed by using the following documentation:

- 1952 Aerial Photograph, supplied by EDR
- 1958 Aerial Photograph, supplied by EDR
- 1969 Aerial Photograph, supplied by EDR
- Raccoon Creek Area Topographic Map – Applied Hydrology Associates dated 12-27-89

The above documentation is included in Attachment 2.



### **West Landfill**

After reviewing the historic maps and aerial photographs of the area, it appeared the West Landfill disposal area was approximately 400 feet by 400 feet and located in the center of the West Landfill area. An outline of the "West Landfill" was drawn on the Topographic Map - West Landfill (IT Corp). This feature can also be seen on Sample Locations - West Landfill (IT Corp) and the 1987 and 1993 aerial photographs. To confirm the location of the disposal area, boring logs from the site were reviewed. Based on the descriptions given on the boring logs, the extent of the disposal areas is larger than seen on the figures and aerial photographs. Based on the boring logs, waste was seen in SB-10, SB-34, and SB-11 to the west and SB-21 through SB-24 to the east. No waste was observed in boring logs SB-25 through SB-30 to the east. The approximate size of the West Landfill is 6.23 acres.

Figure 4 depicts the location of the West Landfill disposal area. Table 3 gives latitude and longitude coordinates of several locations along the boundary of the disposal area.

This disposal area was developed by using the following documentation:

- 1987 Aerial Photograph, supplied by EDR
- 1993 Aerial Photograph, supplied by EDR
- Sample Locations West Landfill – International Technology Corporation dated 1-20-89
- Topographic Map West Landfill – International Technology Corporation dated 1-20-89
- Boring logs from the site investigation

The above documentation is included in Attachment 3.

Tetra Tech is pleased to continue to serve the Trust and PADEP on this Project. If you have any questions, please contact the undersigned at either (412) 921-8398 or [keith.henn@tetrattech.com](mailto:keith.henn@tetrattech.com).

Sincerely,

Keith Henn, PG  
Senior Project Manager

Cc:  
Andrew Steinberg  
Oscar Vazquez  
Derek Amidon  
Jonathan Aglio



TETRA TECH

TABLES



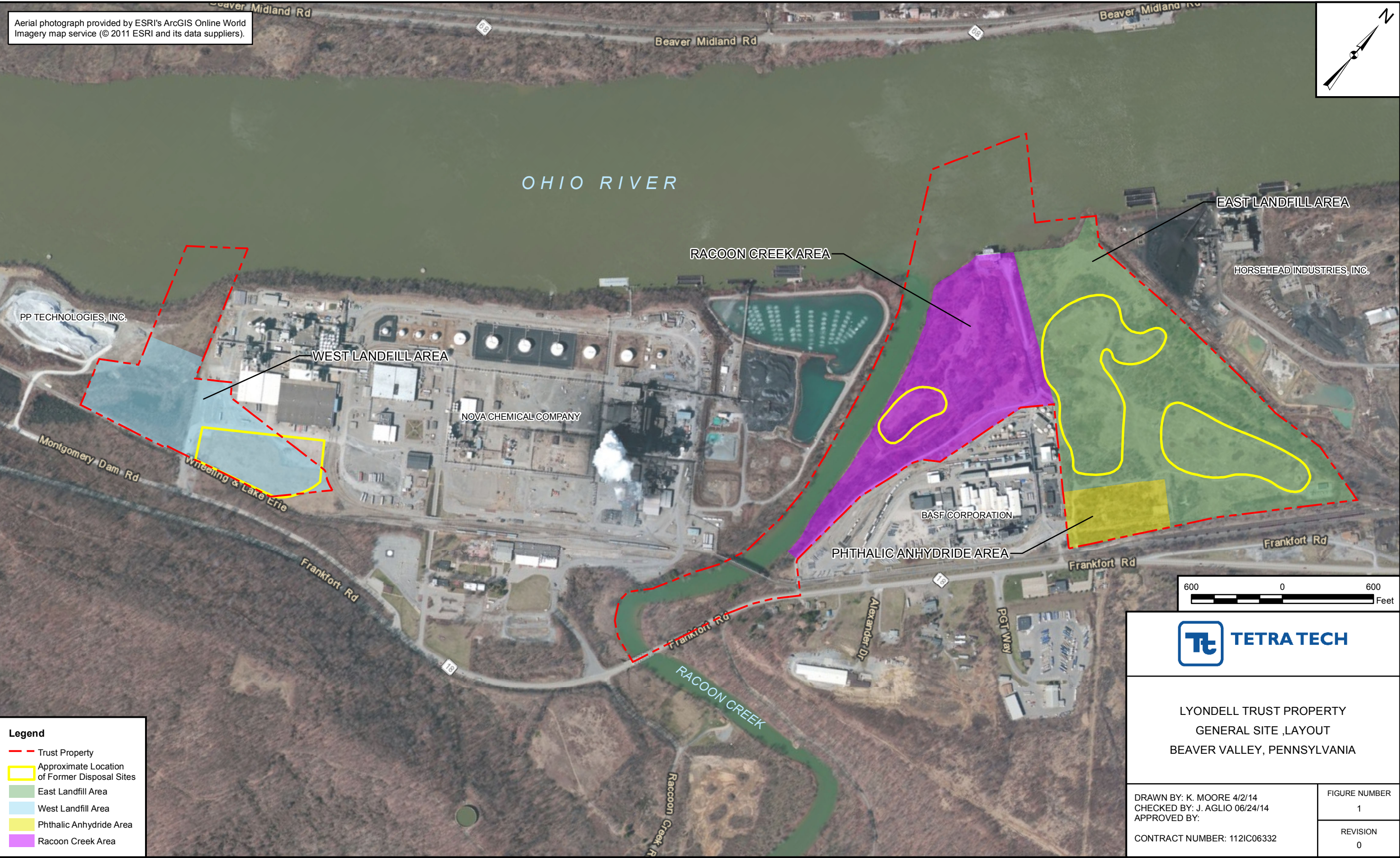
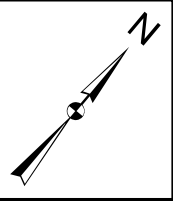


TETRA TECH

FIGURES



Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).



Legend

- Trust Property
- Approximate Location of Former Disposal Sites
- East Landfill Area
- West Landfill Area
- Phthalic Anhydride Area
- Racoon Creek Area



LYONDELL TRUST PROPERTY  
GENERAL SITE ,LAYOUT  
BEAVER VALLEY, PENNSYLVANIA

DRAWN BY: K. MOORE 4/2/14  
CHECKED BY: J. AGLIO 06/24/14  
APPROVED BY:

CONTRACT NUMBER: 112IC06332

FIGURE NUMBER  
1

REVISION  
0



Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).



**Legend**

- Trust Property
- Approximate Location of East Landfill Disposal Areas



LYONDELL TRUST PROPERTY  
EAST LANDFILL DISPOSAL AREA  
BEAVER VALLEY, PENNSYLVANIA

DRAWN BY: D. COUCH 06/10/14  
CHECKED BY: J. AGLIO 06/24/14  
APPROVED BY:

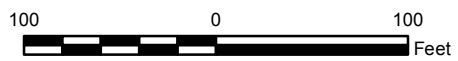
CONTRACT NUMBER: 112IC06332

FIGURE NUMBER  
2

REVISION  
0



Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).



LYONDELL TRUST PROPERTY  
RACCOON CREEK DISPOSAL AREA  
BEAVER VALLEY, PENNSYLVANIA

Legend

- Trust Property
- Approximate Location of Raccoon Creek Disposal Area

DRAWN BY: D. COUCH 06/09/14  
CHECKED BY: J. AGLIO 06/10/14  
APPROVED BY:

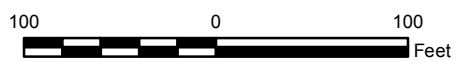
CONTRACT NUMBER: 112IC06332

FIGURE NUMBER  
3

REVISION  
0



Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2011 ESRI and its data suppliers).

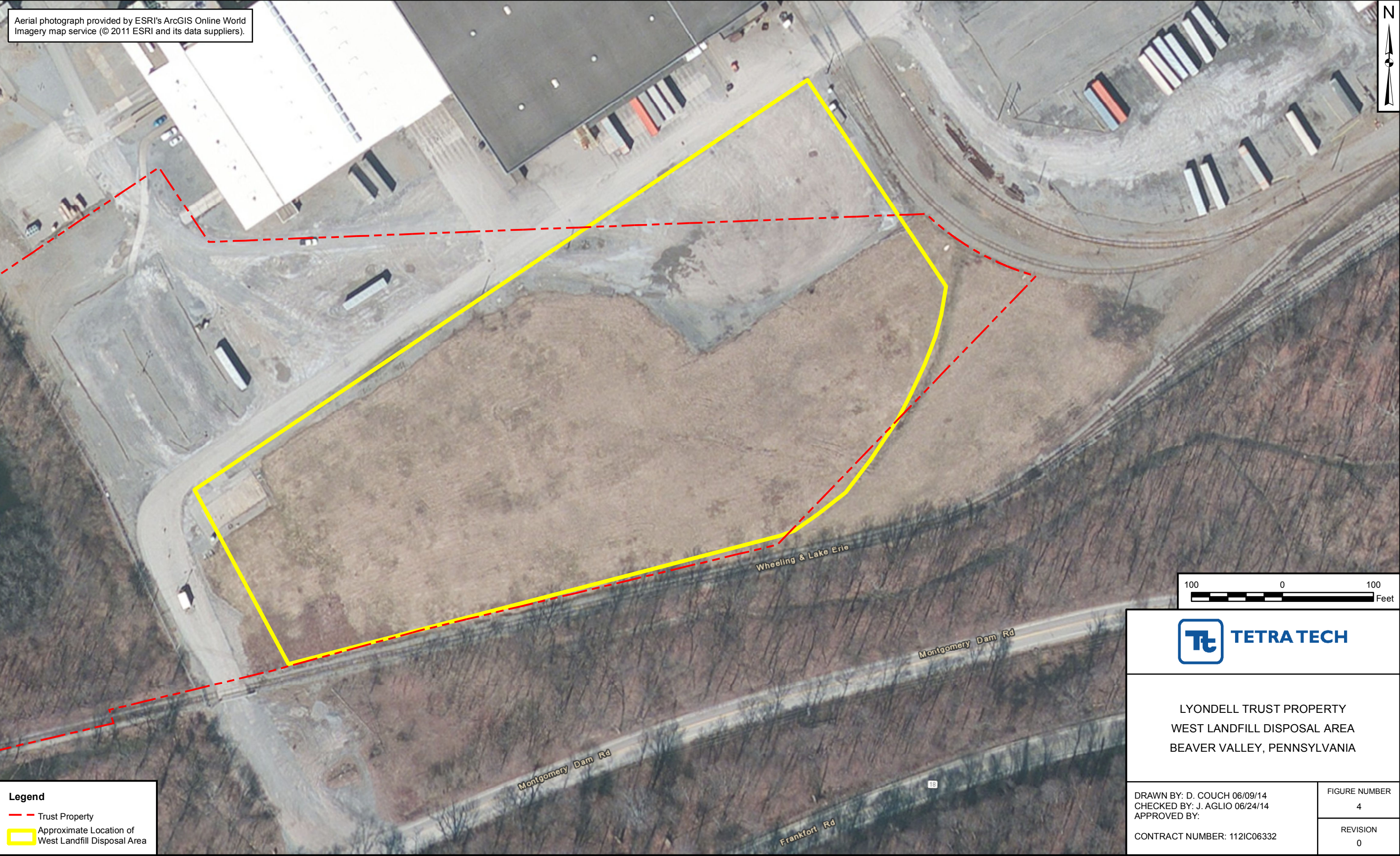


LYONDELL TRUST PROPERTY  
WEST LANDFILL DISPOSAL AREA  
BEAVER VALLEY, PENNSYLVANIA

DRAWN BY: D. COUCH 06/09/14  
CHECKED BY: J. AGLIO 06/24/14  
APPROVED BY:  
CONTRACT NUMBER: 112IC06332

FIGURE NUMBER  
4  
REVISION  
0

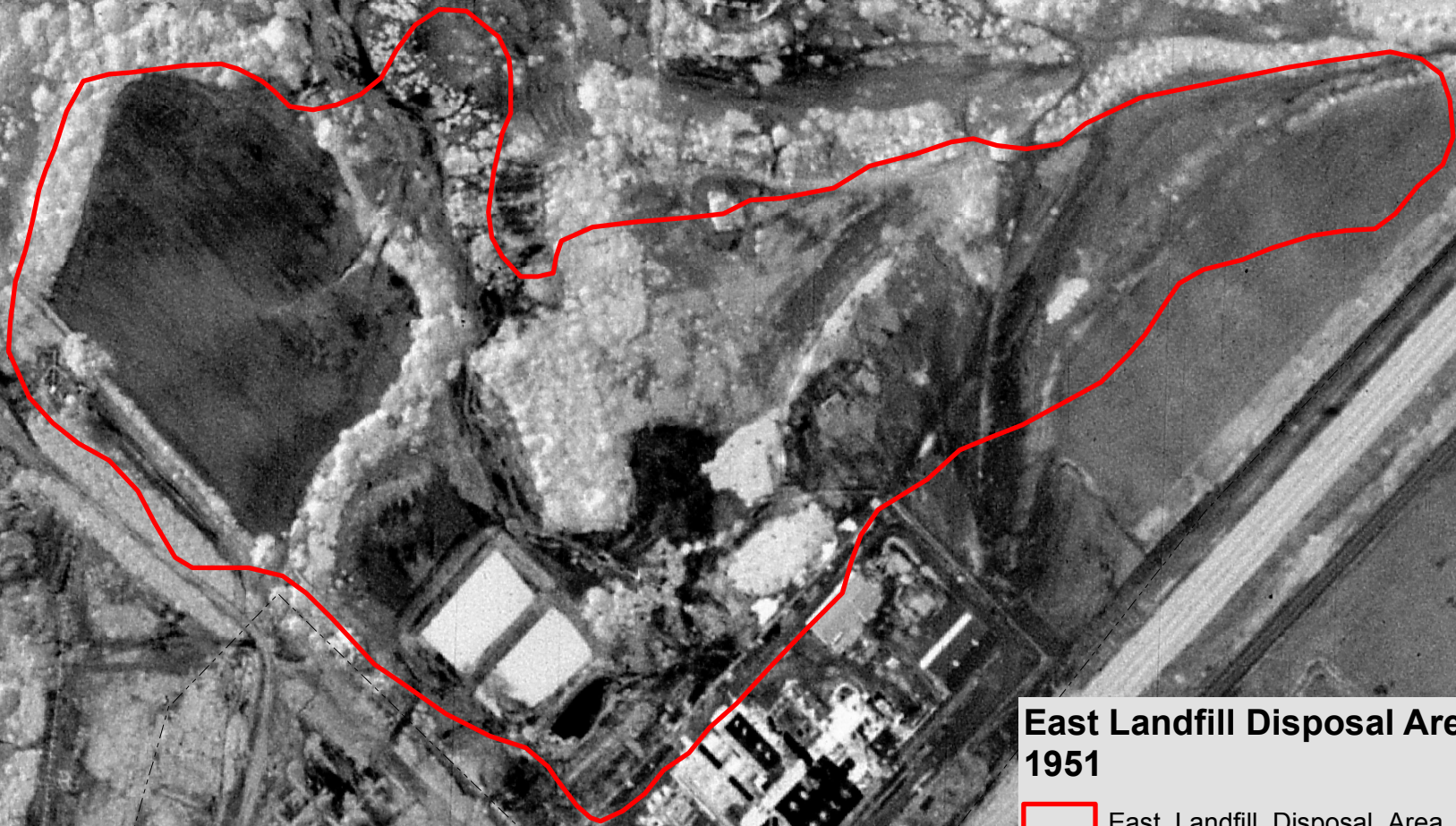
**Legend**  
- - Trust Property  
Approximate Location of  
West Landfill Disposal Area







ATTACHMENT 1

EAST LANDFILL DOCUMENTATION



### East Landfill Disposal Area 1951

-  East\_Landfill\_Disposal\_Area
-  Racoon\_Creek\_Disposal\_Area

0 150 300 600 900 1,200 1,500 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





# East Landfill Disposal Area 1982

- East\_Landfill\_Disposal\_Area
- Racoon\_Creek\_Disposal\_Area

0 150 300 600 900 1,200 1,500 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





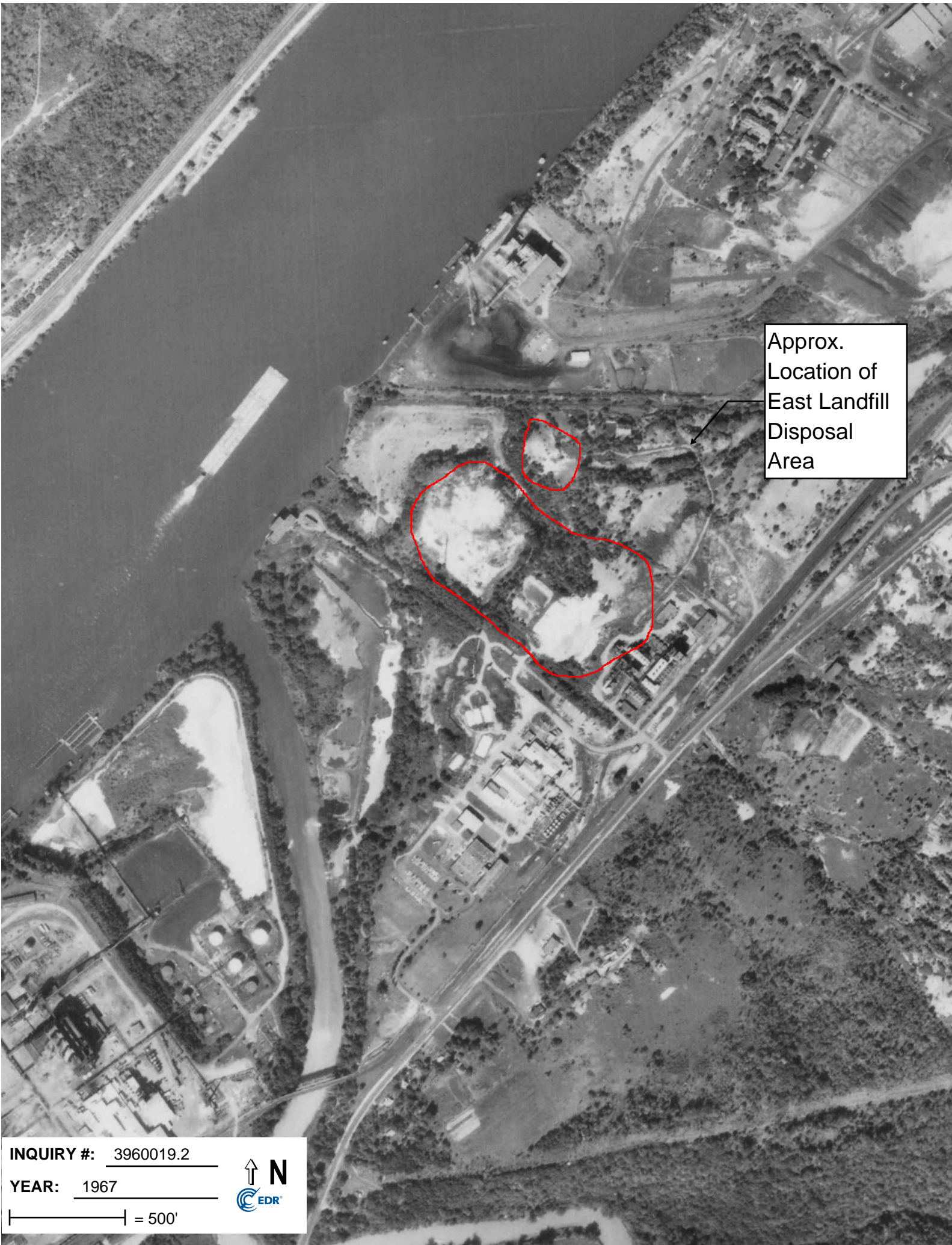
Approx.  
Location of  
East Landfill  
Disposal Area

INQUIRY #: 3960019.2

YEAR: 1952

| = 500'





Approx.  
Location of  
East Landfill  
Disposal  
Area

INQUIRY #: 3960019.2

YEAR: 1967

| = 500'







Approx.  
Location of East  
Landfill  
Disposal Area

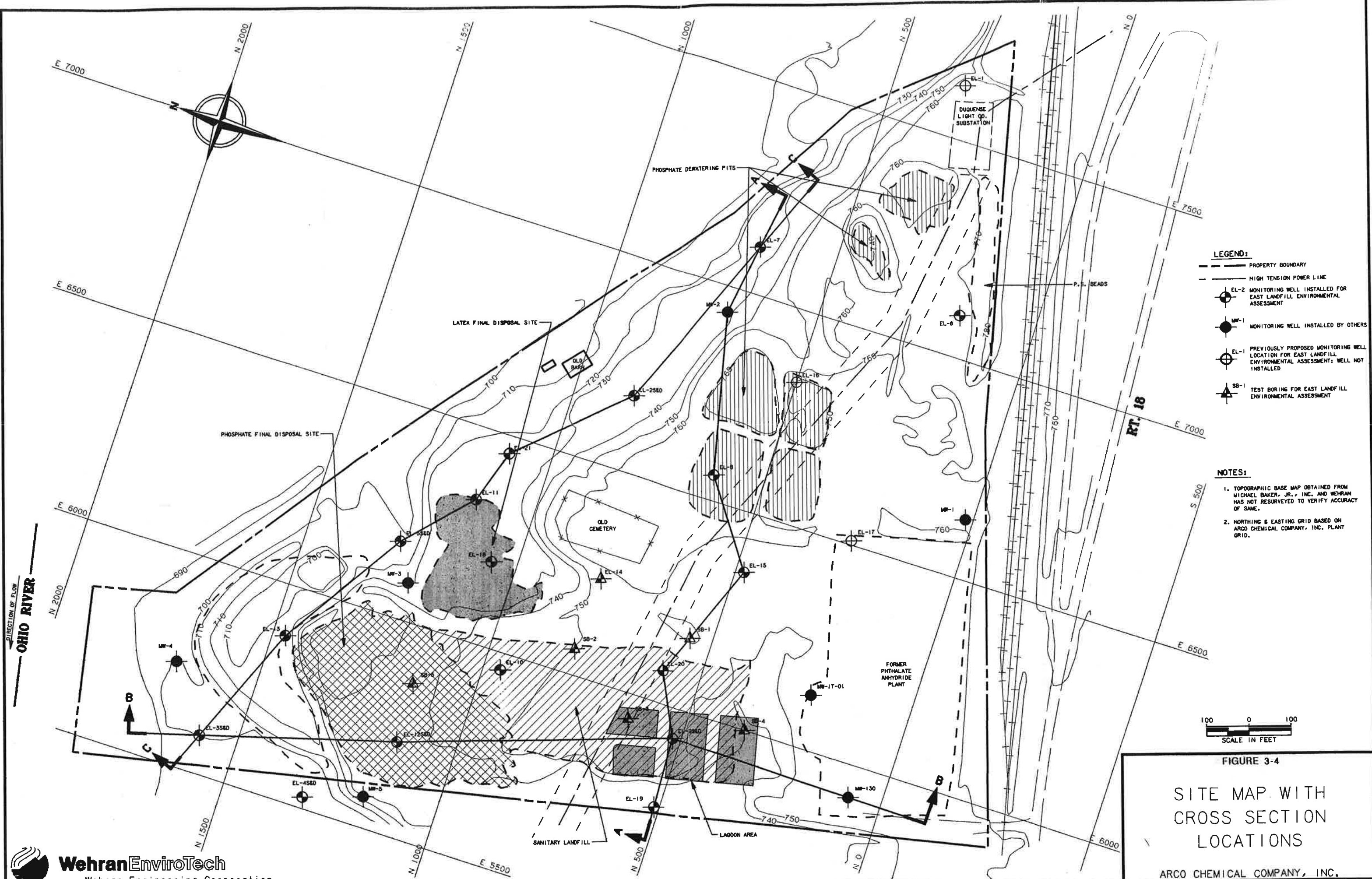
INQUIRY #: 3960019.2

YEAR: 1987

| = 750'







**LEGEND:**

- PROPERTY BOUNDARY
- HIGH TENSION POWER LINE
- EL-2 MONITORING WELL INSTALLED FOR EAST LANDFILL ENVIRONMENTAL ASSESSMENT
- MW-1 MONITORING WELL INSTALLED BY OTHERS
- EL-1 PREVIOUSLY PROPOSED MONITORING WELL LOCATION FOR EAST LANDFILL ENVIRONMENTAL ASSESSMENT; WELL NOT INSTALLED
- ▲ SB-1 TEST BORING FOR EAST LANDFILL ENVIRONMENTAL ASSESSMENT

**NOTES:**

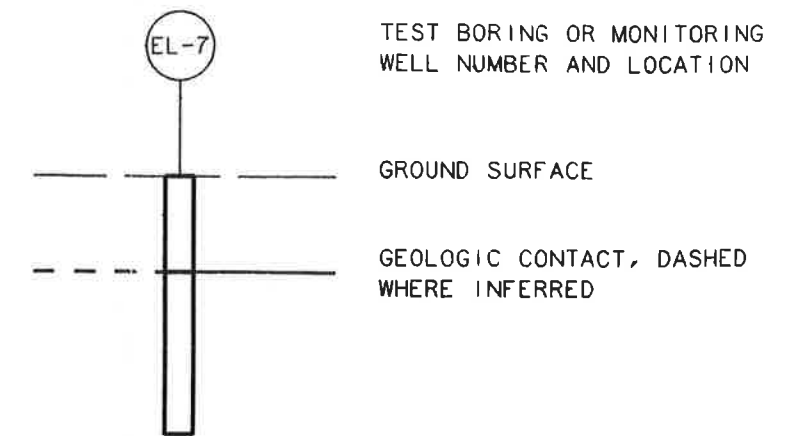
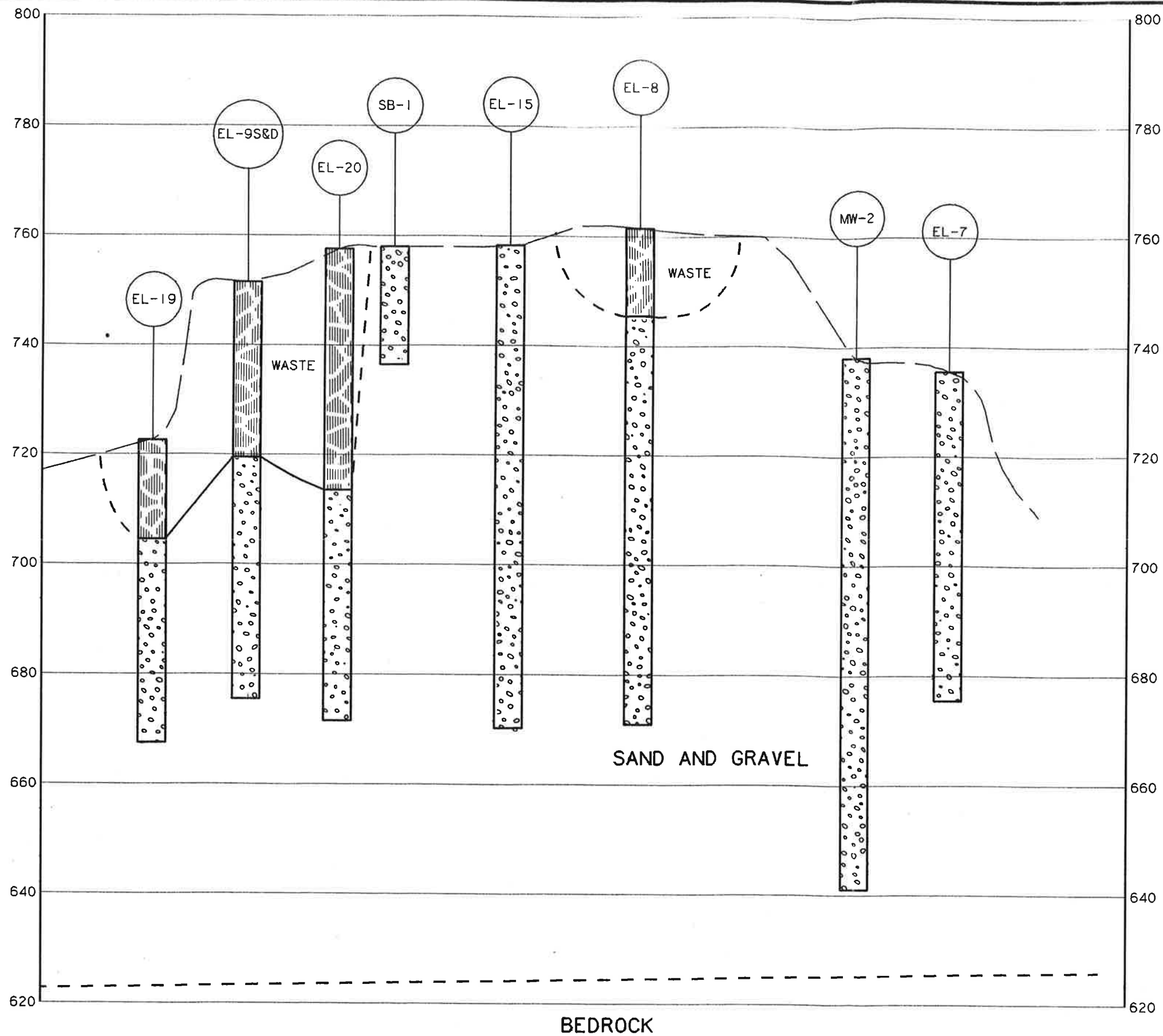
1. TOPOGRAPHIC BASE MAP OBTAINED FROM MICHAEL BAKER, JR., INC. AND WEHRAN HAS NOT RESURVEYED TO VERIFY ACCURACY OF SAME.
2. NORTHING & EASTING GRID BASED ON ARCO CHEMICAL COMPANY, INC. PLANT GRID.



**FIGURE 3-4**

**SITE MAP WITH  
CROSS SECTION  
LOCATIONS**

ARCO CHEMICAL COMPANY, INC.



DESIGNATION:	DESCRIPTION:
	WASTE
	SAND AND GRAVEL
	BEDROCK

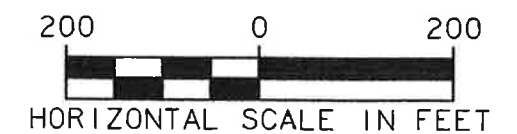
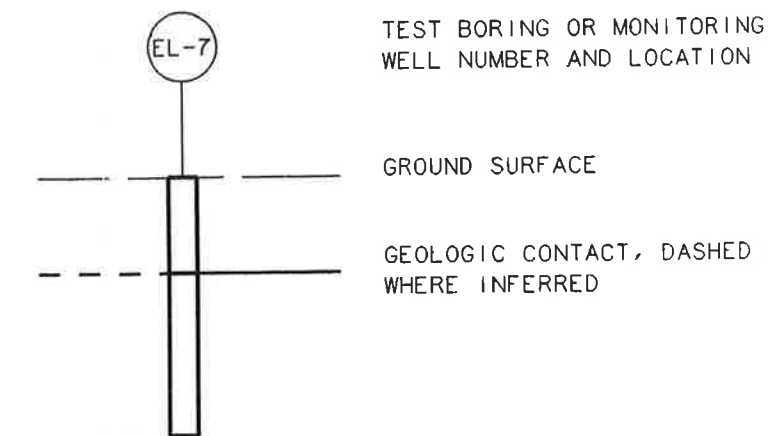
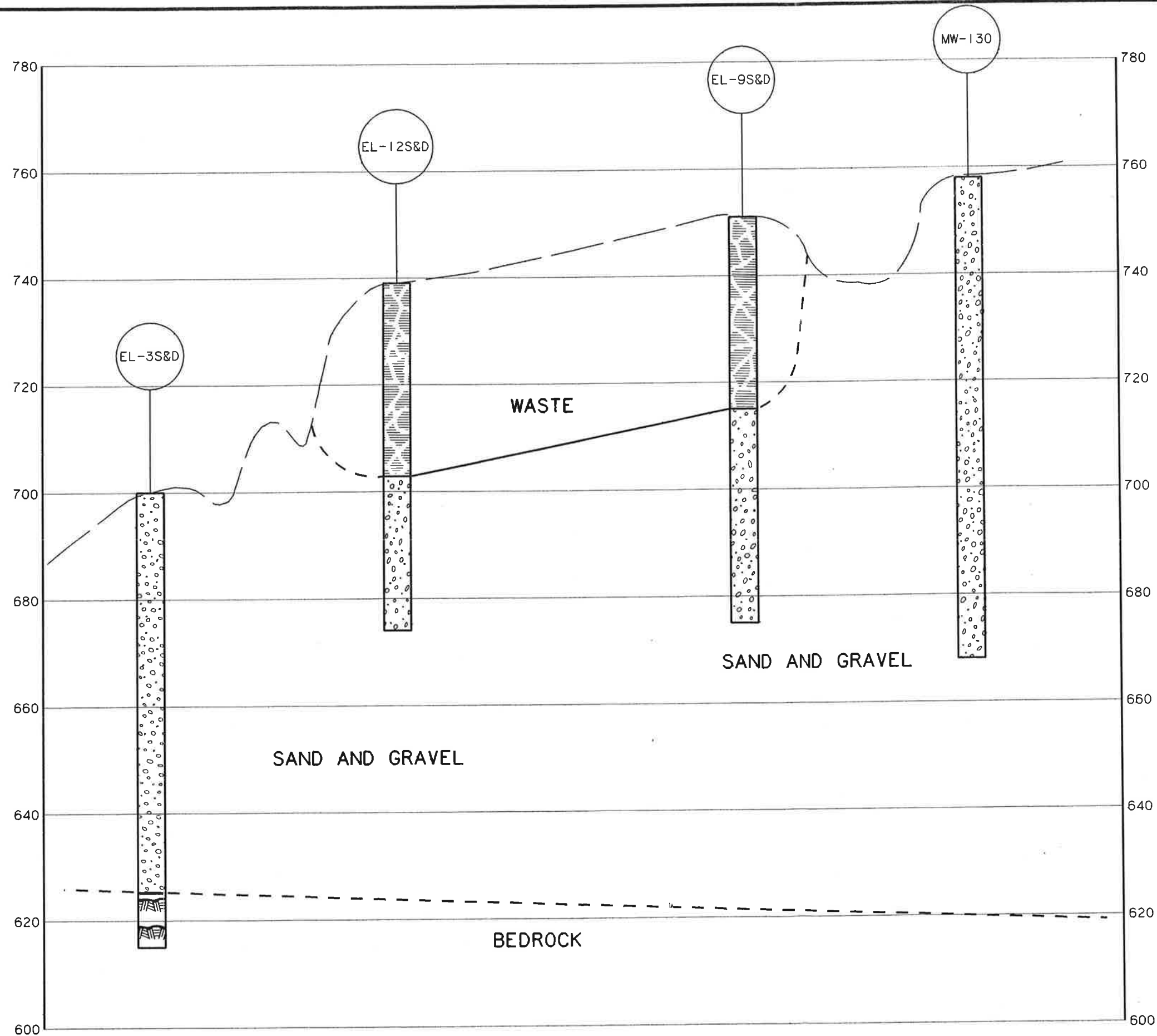


FIGURE 3-5

# GEOLOGIC CROSS-SECTION A-A

ARCO CHEMICAL COMPANY, INC.



DESIGNATION:	DESCRIPTION:
	WASTE
	SAND AND GRAVEL
	BEDROCK

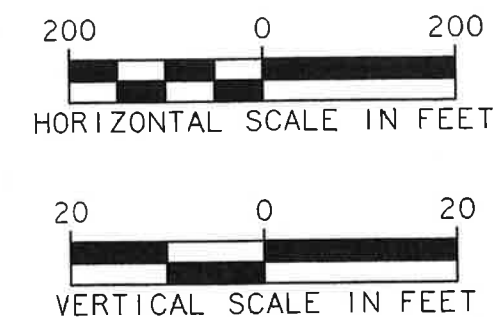


FIGURE 3-6

GEOLOGIC  
CROSS-SECTION  
B-B

ARCO CHEMICAL COMPANY, INC.

# BORING/WELL NO. SB-1

SHEET 1 of 1

PROJECT: ARCO EAST LANDFILL

PROJECT NO: 01282HG

CLIENT: ARCO Chemical

RIG: CME-75

CONTRACTOR: Penn.Drilling

GS ELEV: 757.3ft.

N-S COORD: 553.9

E-W COORD: 6171.2

WL REF ELEV: N/Aft.

DATE STARTED: 2/27/91

DATE FINISHED: 2/27/91

OPERATOR: E. Dye

GEOLOGIST: C. Siatras

GROUNDWATER DATA (feet)				CASING	SAMPLE	TUBE	CORE
DATE	GW DEPTH	GW ELEV	INTAKE	TYPE	HSA	SS	
				DIAM.	6.25"	2"	
				WEIGHT		140#	
				FALL		30"	

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNIFIED	FIELD DESCRIPTION	REMARKS
									Spoon Hdspace
	5	2	X	0	15	X		<u>SOIL FILL</u> Brown fmc SAND and fm Gravel, little Silt, with concrete fragments, wood, moist.	
		3	X	3	13	X			
		4	X	3	7	X			
		5	X	1	10	X		<u>ALLUVIUM</u> Brown mf SAND, little(+) to trace fm Gravel, trace to trace(-) Clayey Silt.	1
	10	6	X	13	4	X			8
		7	X	14	3	X			
	15	8	X	18	18	X			1
		9	X	20	15	X			
		10	X	19	14	X			
	20	11	X	19	13	X			
								22.0'	
	25							END OF BORING	
	30								
	35								
	40								
	45								
	50								
	55								

## BORING/WELL NO. EL-15

SHEET 1 of 2

PROJECT: ARCO EAST LANDFILL

PROJECT NO: 01282HG

CLIENT: ARCO Chemical

CONTRACTOR: Penn.Drilling

RIG: CME-75

GS ELEV: 757.84ft.

N-S COORD: 480

E-W COORD: 6360

WL REF ELEV: 759.70ft.

DATE STARTED: 2/1/91

DATE FINISHED: 2/6/91

OPERATOR: Russell

GEOLOGIST: TKN

GROUNDWATER DATA (feet)					CASING	SAMPLE	TUBE	CORE
DATE	GW DEPTH	GW ELEV	INTAKE	TYPE	HSA	SS		
				DIAM.	6.25"	2"		
				WEIGHT		140#		
				FALL		30"		

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNIFIED	FIELD DESCRIPTION	REMARKS
									Spoon Hdspace
		2	X	17	30			ALLUVIAL DEPOSITS Brown fmc SAND, some fm subrounded Gravel, with Cobbles/Boulders, moist.	
	5	3	X	16	27				
		4	X	14	13				
		5	X	12	12				1
	10	6	X	15	7				6
		7	X	0	9				
	15	8	X	24	11				2.2
		9	X	12	14				
	20	10	X	15	16				10
		11	X	14	12				
		12	X	14	16				
	25	13	X	12	22				
		14	X	12	20				
		15	X	16	20			28.0'	
	30	16	X	16	23			Brown mc SAND, moist.	
		17	X	14	17				
	35	18	X	18	15				
		19	X	19	12				
		20	X	18	17			38.0'	
	40	21	X	15	11			Brown fmc SAND and fmc subround Gravel, little Clayey Silt, moist	
		22	X	16	12				
	45	23	X	14	11				
		24	X	16	13				
		25	X	15	19				
	50	26	X	4	39				
		27	X	15	43				
	55	28	X	3	70				
		29		12					



**SHEET 2 of 2**

E-W COORD: 6360

[illegible]

## BORING/WELL NO. EL-13

SHEET 1 of 1

PROJECT: ARCO EAST LANDFILL

PROJECT NO: 01282HG

GS ELEV: 701.45ft.

CLIENT: ARCO Chemical

N-S COORD: 1470

CONTRACTOR: Penn.Drilling

RIG: CME-75

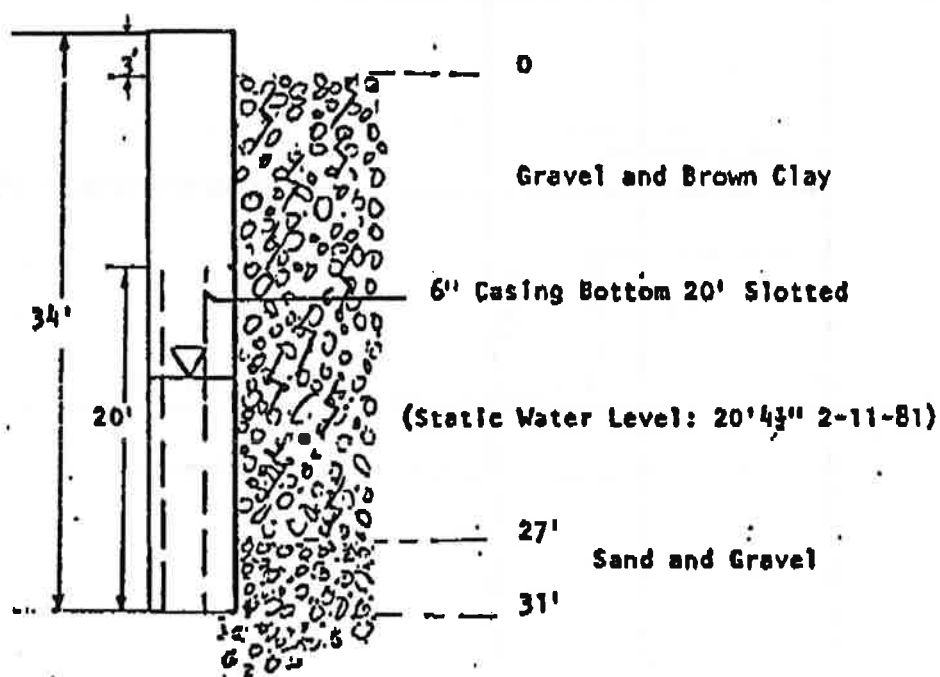
E-W COORD: 5880

## GROUNDWATER DATA (feet)

DATE	GW DEPTH	GW ELEV	INTAKE	TYPE	CASING	SAMPLE	TUBE	CORE	ML REF ELEV: 703.50ft.
				DIAM.	6.25"	2"			DATE STARTED: 2/7/91
				WEIGHT		140#			DATE FINISHED: 2/8/91
				FALL		30"			OPERATOR: Russell
									GEOLOGIST: T. Nytra

WELL CONSTRUCT	DEPTH (feet)	SAMPLE NUMBER	SAMPLE & TYPE	RECOVERY (inches)	N-VALUE	LOG	UNITED	FIELD DESCRIPTION	REMARKS
									Spoon Hdspace
		2	X	12	34			<u>ALLUVIAL DEPOSITS</u> Brown fmc SAND and fmc Gravel, little(+) Clayey Silt, moist.	2
	5	3	X	16	47				1
		4	X	12	28				1
		5	X	17	47				1
	10	6	X	11	45				2
		7	X	12	83				1
	15	8	X	15	29			@ 15' becomes saturated	4
		9	X	15	8				6.5
	20	10	X	5	5				4.5
		11	X	15	1				
	25	12	X	6	4			Dark Grey Clayey SILT and f Sand, saturated	4.5
		13	X	18	4.5				4.5
								END OF BORING	
	30								
	35								
	40								
	45								
	50								
	55								

## MONITORING WELL #3



ATTACHMENT 2

RACCOON CREEK DOCUMENTATION



Approx.  
Location of  
Raccoon Creek  
Disposal Area

INQUIRY #: 3960019.2

YEAR: 1952

| = 500'







Approx.  
Location of  
Raccoon Creek  
Disposal Area

INQUIRY #: 3960019.2

YEAR: 1958

| = 500'



RF 6813

3- 5-69

Approx.  
Location of  
Raccoon Creek  
Disposal Area

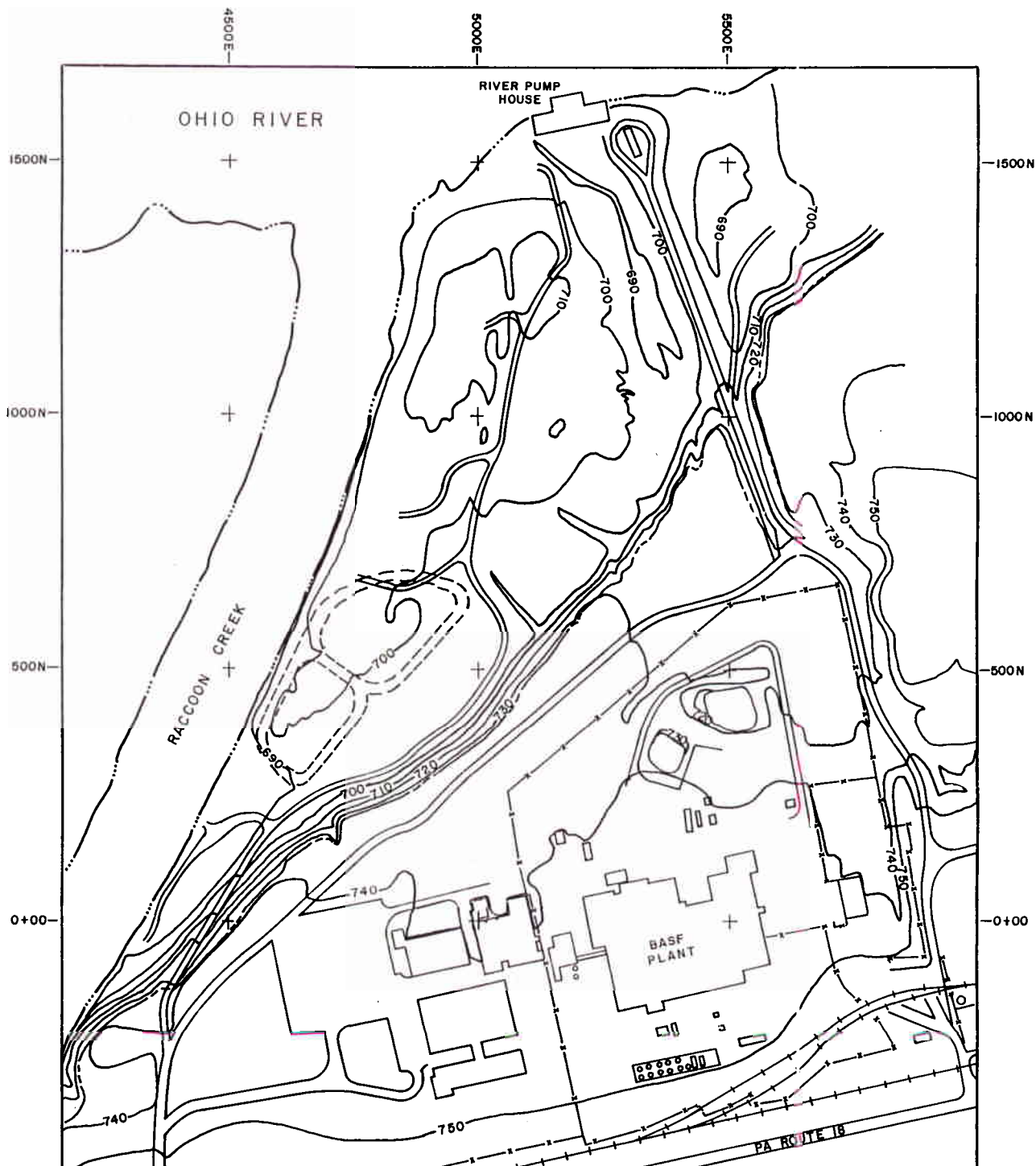
INQUIRY #: 3960019.2

YEAR: 1969

| = 500'







# LEGEND

- 720 — TOPOGRAPHIC ELEVATION  
(FEET ABOVE MEAN SEA LEVEL)
- — — — — STREAM BOUNDARY
- ==== HIGHWAY
- CONRAIL
- BUILDING
- FORMER DISPOSAL PIT AREA  
(1958 PHOTOGRAPH)



0 100 200 300 FT  
SCALE

ARCO CHEMICAL COMPANY  
BEAVER VALLEY PLANT  
MONACA, PENNSYLVANIA

FIGURE 1-2

## RACCOON CREEK AREA TOPOGRAPHIC MAP

(BASED ON 1989 SURVEY)



Applied  
Hydrology  
Associates, Inc.

PROJECT NUMBER 366

DATE	REVISION	DRAWN	CHECKED	APPROVED
12-27-89	0	DMM	ESB	MJD



ATTACHMENT 3

WEST LANDFILL DOCUMENTATION



Approx.  
Location of  
West Landfill  
Disposal Area

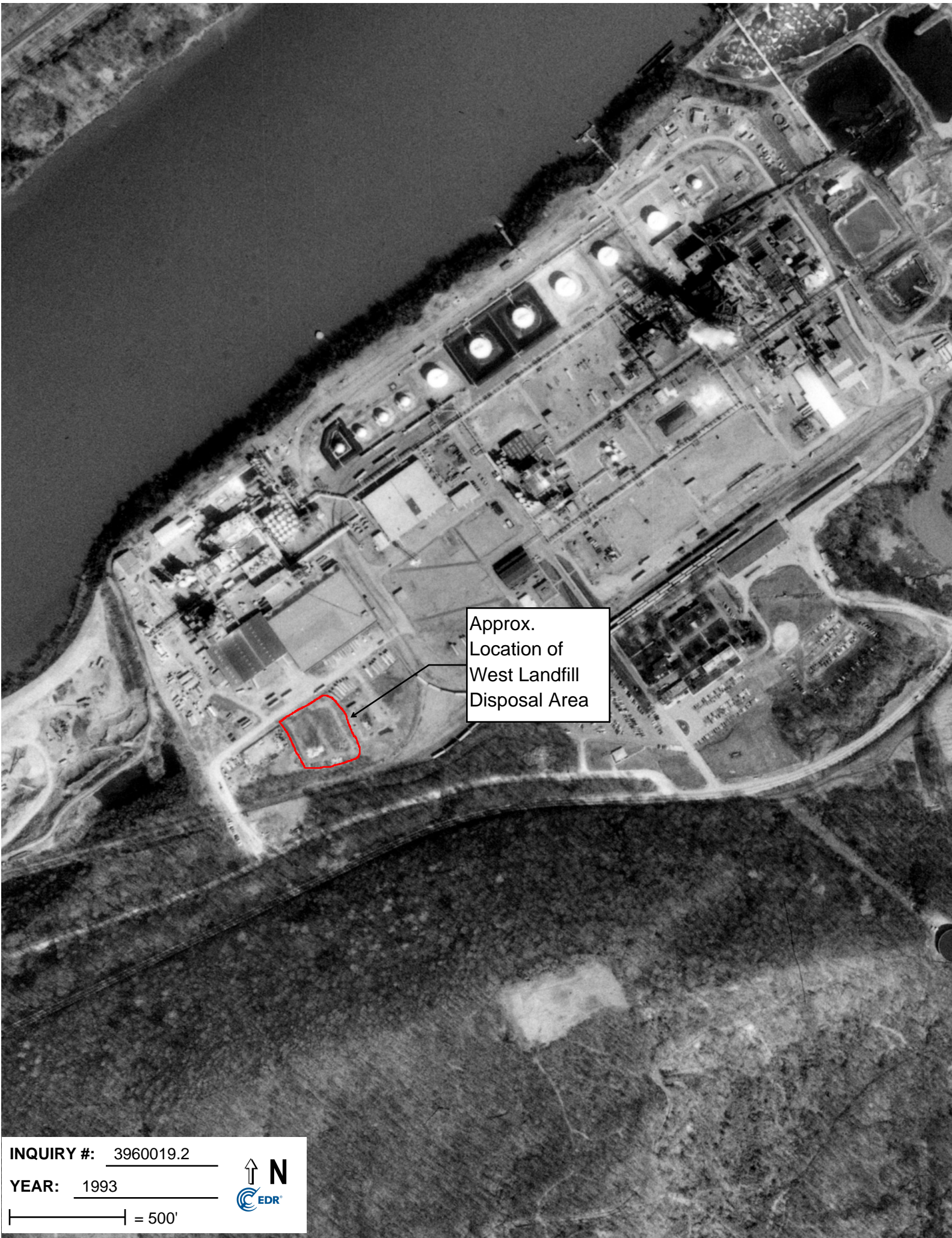
INQUIRY #: 3960019.2

YEAR: 1987

| = 750'







Approx.  
Location of  
West Landfill  
Disposal Area

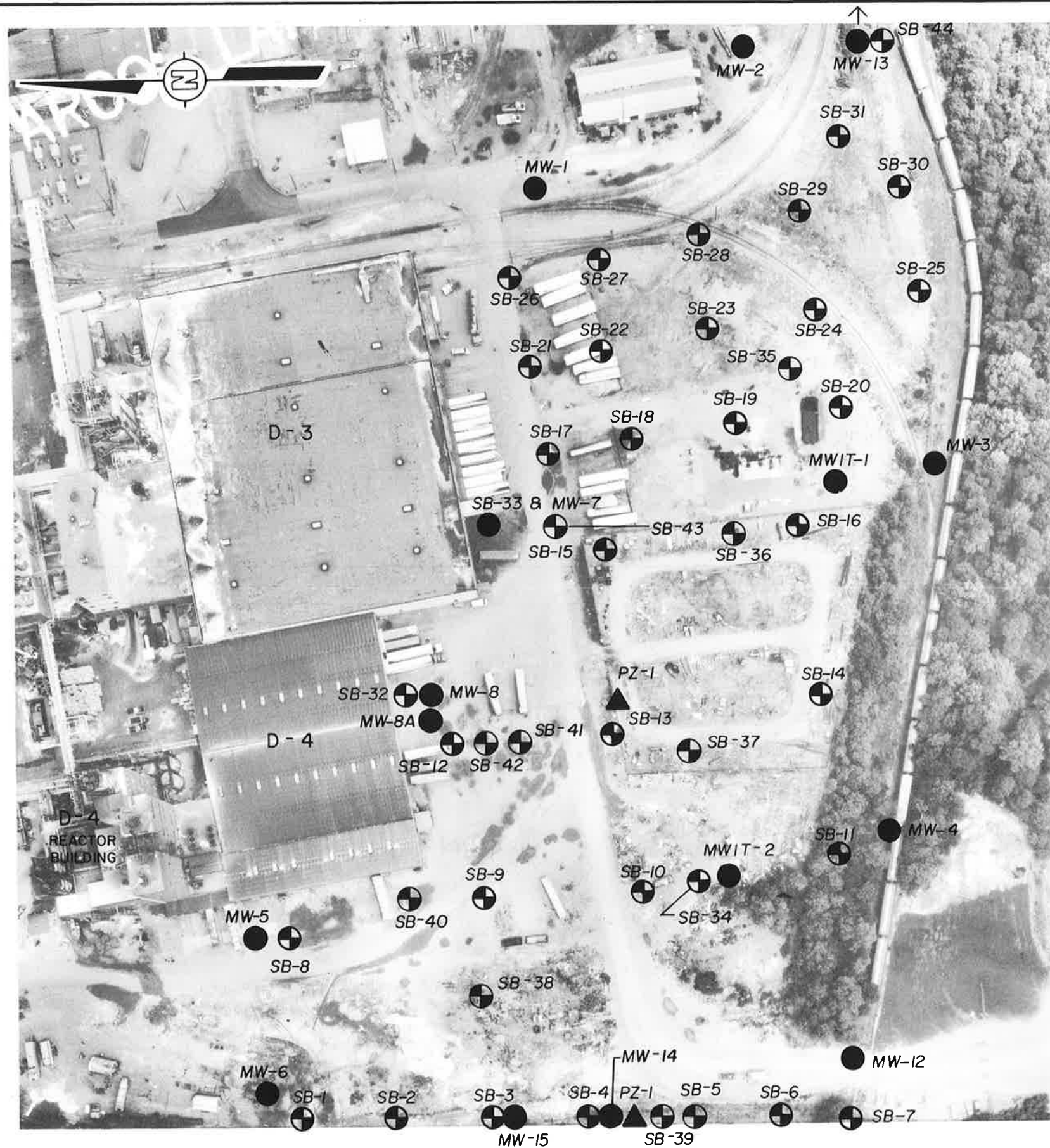
INQUIRY #: 3960019.2

YEAR: 1993

| = 500'







# LEGEND

- SB-10 BORINGS
- MW-5 MONITORING WELL
- PZ-1 PIEZOMETER



FIGURE ES-2

SAMPLE LOCATIONS  
WEST LANDFILL

PREPARED FOR  
ARCO CHEMICAL  
MONACA, PENNSYLVANIA.



DRAWN BY	R. Weible	CHECKED BY	S.E.T.	1/20/89	DRAWING NUMBER
BY	12-6-88	APPROVED BY	PLAN	1-20-89	303558-E25

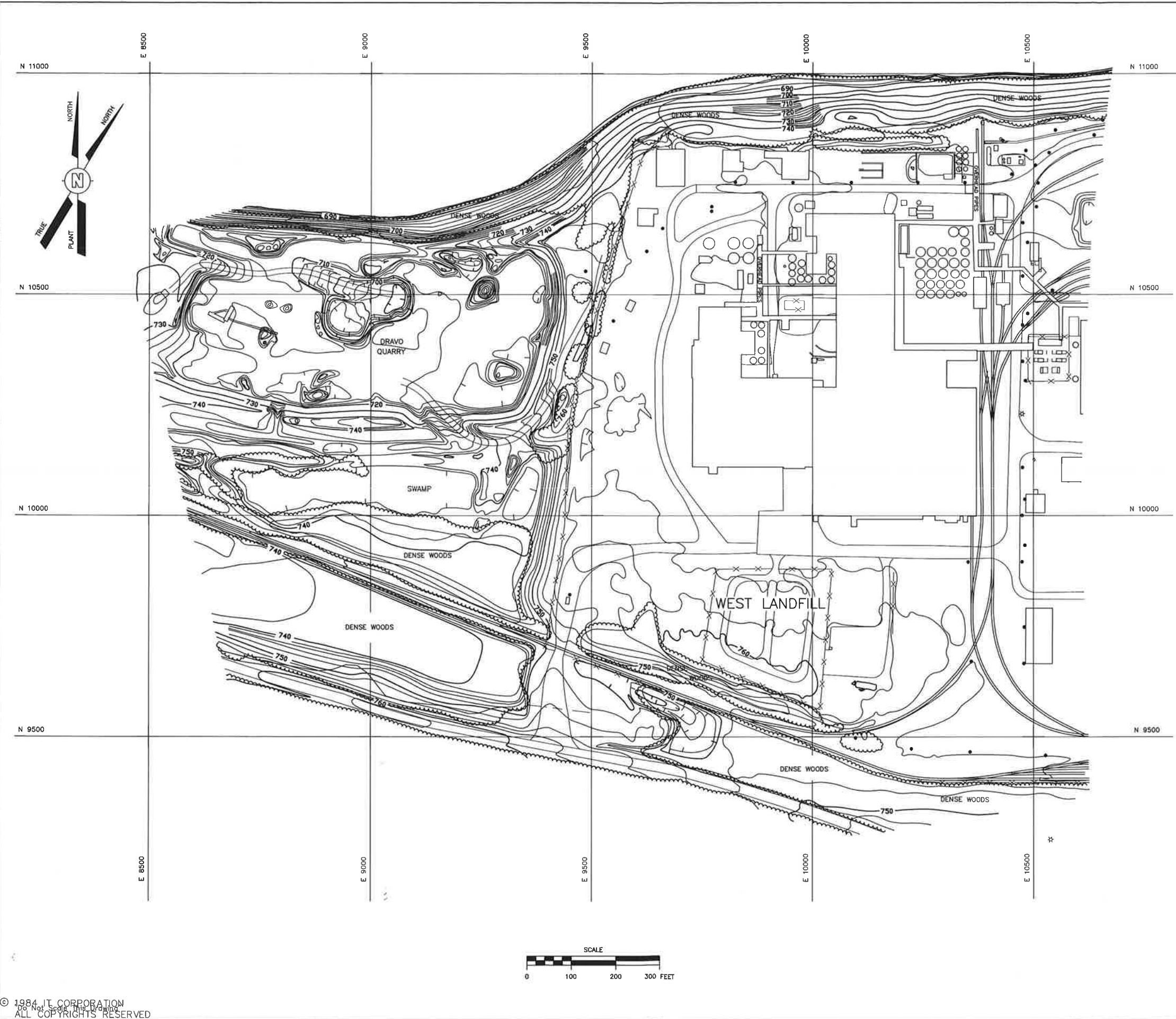


FIGURE 1-2  
TOPOGRAPHIC MAP  
WEST LANDFILL AREA

PREPARED FOR  
ARCO CHEMICAL  
MONACA, PENNSYLVANIA



DATE BEGAN 8-12-88 BORING NO. SB-10 FIELD ENGINEER S. TITUSKIN  
DATE FINISHED 8-12-88 CHECKED BY C. PETERMAN  
GROUND SURFACE EL. 756.66' N 9867.04' E 9677.18' GWL DEPTH -  
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T S F.	REMARKS
755										
750	5.0	X S 1	12-10-13	17"	FILL (MEDIUM DENSE, DARK GRAY, SANDY SILT SOME GRAVEL, DRY)					
745	10.0	X S 2	4-8-5	4"	FILL (VERY DENSE, DARK GRAY, SANDY SILT TO SILTY SAND)					
		X S 2	5-10-50	12"	FILL (TRACE GRAVEL, MOIST SAME AS ABOVE)					
740	15.0	X S 3	34-16-28	6"	FILL (VERY DENSE, DARK GRAY, SILTY SAND, CLAY IN LENSES)					
		X S 3	6-28-33	12"	FILL (SOME GRAVEL, MOIST, SAME AS ABOVE)					
735	20.0	X S 4	18-39-42	12"	FILL (VERY DENSE, DARK GRAY TO BLACK, SANDY SILT, SOME GRAVEL, CLAY LENSES, WET)					
730	25.0	X S 5	17-28-18	3"	FILL (DENSE, DARK GRAY SAND, SOME SILT, TRACE GRAVEL, WET) 26.5'					
728.66	28.0	X S 5	8-10-16	12"	STIFF GRAY, SILTY CLAY, WET, ODOR					
					BOTTOM OF BORING 28.0'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT\_CME 75

DRILLERS C. WADDELL  
T. SWEARINGER

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

DATE BEGAN 8-18-88 BORING NO. SB-11 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-18-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 759.81' N 9722.77' E 9685.94' GWL DEPTH 25.0'  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME 8-18-88

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755	5.0									
		S 1	17-7-7	2"	FILL (DARK BROWN, SANDY SILT TRACE GRAVEL)					
		S 1	2-2-10	6"	FILL (MEDIUM DENSE, GRAY SILTY SAND, PLASTIC BEADS, STYROFOAM, METAL RINGS)					
750	10.0									
		S 2	31-35	5"	FILL (VERY DENSE, BROWN SAND WITH GRAVEL, PIECES OF CONCRETE)		NA			SLOW DRILLING MAY BE SLAB OF CONCRETE
745	15.0									
			87/4	0	CONCRETE (?)					
740	20.0		25-30/0	0						
			280/4	0						
8-18-88										
	25.0	S 3	67-37-10	14"	FILL (DENSE BLACK SAND, WOOD, PLASTIC BEADS)					
		S 4	7-9-11	15"	GRAY CLAY, WET					
		S 5	7-12-22	15"	GRAY CLAY, WITH BROWN SILT, WET		cl			
730	30.0				GRAY CLAY WITH SAND AND GRAVEL, WET					
728.31	31.0		17-50	< 1	VERY DENSE, BROWN SAND AND GRAVEL		gp			
					BOTTOM OF BORING 31.0'					

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

DRILLING EQUIPMENT CME 75

DRILLERS C. WADDELL  
T. SWEARINGER

PROJECT NO. 303558

BORING NO. SB-11

PROJECT NAME ARCO MONACA

SHEET 1 of 1

DATE BEGAN 8-12-88 BORING NO. SB-12 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-12-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 756.02' N 10060.29' E 9854.76' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755										
750	5.0	<del>S</del> 1	82-90-42	17"	GRAY, SILTY CLAY (TOP 4")	5.3'	cl			
					VERY DENSE, TAN SAND AND GRAVEL					
745	10.0	<del>S</del> 2	18-26-32	17"						
740	15.0	<del>S</del> 3	20-40-52	18"			sp			
735	20.0	<del>S</del> 4	24-54-56	12"	VERY DENSE, DARK BROWN SAND AND GRAVEL					
730	25.0	<del>S</del> 5	42-92-56	12"	BROWN SILTY SAND WITH GRAVEL	25.0'	sm			
					VERY DENSE, DARK BROWN SAND AND GRAVEL	25.3'				
							sp			
724.52	31.5	<del>S</del> 6	19-23-27	17"						
					BOTTOM OF BORING 31.5					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS T. STEWART  
B. NEAL

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN  
 BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

BORING NO. SB-12

PROJECT NAME ARCO-MONACA

SHEET 1 of 1



DATE BEGAN	8-12-88	BORING NO.	SB-13	FIELD ENGINEER	J. TESORIERO
DATE FINISHED	8-12-88			CHECKED BY	C. PETERMAN
GROUND SURFACE EL.	756.26'	N	9860.85'	E	9829.09'
DRILLING METHOD	4 1/4" ID HOLLOW STEM AUGER			GWL DEPTH	-
				GWL DATE/TIME	-

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755										
	5.0									
750		S 1	9/2-16	12"	FILL (BLACK, CLAYEY SILT (TOP 6") GRAY SAND)					PLASTICS, STYROFOAM
	10.0									
745		S 2	6-9-19	12"	FILL (MEDIUM DENSE, DARK GRAY SAND, ORGANIC VAPORS, PLASTIC BEADS, BROWN FIBER)		NA			HNU = 6 ppm
	15.0									
740		S 3	14-62/4	8"	FILL (BLACK, CLAYEY SILT WITH SAND)					
	20.0									
735		S 4	14-22-44	7"	FILL (BLACK, CLAYEY SILT, PLASTIC BEADS, STYROFOAM, WET)					
	25.0									GLUE-LIKE PROPERTIES WHEN SEPARATED, SAMPLE WAS TAKEN FROM AUGER BIT
729.76	26.5	S 5	7-9-11	<1"	DARK GRAY, SILTY CLAY, ORGANIC VAPORS, WET		cl			
					BOTTOM OF BORING 26.5'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS T. STEWART  
B. NEAL

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

DATE BEGAN <u>8-12-88</u>		BORING NO. <u>SB-14</u>		FIELD ENGINEER <u>S. TITUSKIN</u>	
DATE FINISHED <u>8-15-88</u>				CHECKED BY <u>C. PETERMAN</u>	
GROUND SURFACE EL. <u>761.35'</u>		N <u>9668.53'</u> E <u>9792.85'</u>		GWL DEPTH <u>-</u>	
DRILLING METHOD <u>4 1/4" ID HOLLOW STEM AUGER</u>				GWL DATE/TIME <u>-</u>	

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
760						NA	NA			PLASTIC STYROFOAM BALLS, WOOD  METAL, PLASTIC, STYROFOAM, BEGIN NEW BORING OFFSET 3'  PIECES OF BRICK, METAL  ABANDONED HOLE AT 16', METAL, RUBBER GASKET ON AUGERS  ODOR
	5.0									
755		S 1	6-5-10	4"	FILL (MEDIUM DENSE TO DENSE, BROWN, SILTY SAND, SOME GRAVEL, MOIST)					
		S 2	20-18-19	6"	FILL (VERY DENSE, GRAY, SANDY SILT, TRACE GRAVEL, MOIST)					
	10.0									
750		S 2	15-50/2	17"	FILL (VERY DENSE, DARK GRAY, SANDY SILT, SOME GRAVEL, MOIST)					
	15.0									
745		S 3	30-50/3	0"	FILL (VERY DENSE, DARK GRAY, SANDY SILT, SOME GRAVEL, MOIST, WITH METAL 15.0 - 15.5)					
		S 3	5-16-18	0"	FILL (VERY DENSE, DARK GRAY, SANDY SILT, SOME GRAVEL, MOIST, WITH METAL 15.5 - 16.0)					
	20.0									
740		S 4	38-50-3	0"	METAL (20.0' - 20.5')					
		S 4	5-2-7	1"	WOOD, WET (20.5 - 22.0')					
		S 4	3-3-10	1"	FILL (MEDIUM DENSE, GRAY, SILTY SAND, MOSTLY WOOD, WET 22.0' - 23.5')					
	25.0									
		S 4	79/4	4"	FILL (TILE, GLASS, WIRE 25.0' - 25.5') 25.5'					
734.35	27.0	S 6	50/0	0"						
			25-7-10	18"	STIFF, GRAYISH BROWN, SILTY CLAY, MOIST		cl			
					BOTTOM OF BORING 27.0'					
	30.0									
	35.0									
	40.0									

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS C. WADDELL, R. WADDELL  
T. SWEARINGER

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558BORING NO. SB-14PROJECT NAME ARCO-MONACASHEET 1 of 1

DATE BEGAN 8-15-88 BORING NO. SB-15 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-15-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 756.23' N 9862.49' E 10020.35' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755					FILL (BLACK, SANDY SILT)	X	NA			LOGGED FROM CUTTINGS
	5.0									
750		S 1	59-12	5"	FILL (SANDY SILT WITH GLASS AND PLASTIC, BROWN FIBER DIFFICULT TO SEPARATE, SANDY SILT WITH PLASTICS)					HARD PLASTIC
		S 2	28-78-28/2	12"						
	10.0									
745		S 2	8-24-27	16"	FILL (BLACK, SANDY SILT WITH PLASTIC AND WOOD PIECES )					
	15.0									
740		S 3	82-99	10"	FILL (BLACK, HARD PLASTIC WITH SOME BLACK, SANDY SILT)	X				PLASTIC DIFFICULT TO SEPARATE
	20.0									
735		S 4	16-17-13	7"	FILL (HARD, BLACK PLASTIC)					HNU = 20 ppm ON HOLE HNU = 1 ppm BREATHING LEVEL
733.23	23.0	S 4	19-31-23	14"	BROWN, SILTY CLAY	X	cl			
					BOTTOM OF BORING 23.0'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

DRILLING EQUIPMENT MOBLE 80

DRILLERS J. McCANN  
J. SWAN

PROJECT NO. 303558

BORING NO. SB-15

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-15-88 BORING NO. SB-16 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-15-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 759.81' N 9662.80' E 9997.33' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755	5.0									
		S 1	5-4-4	6"	FILL (MEDIUM DENSE, SILTY SAND/SANDY SILT, SOME GRAVEL, DRY)					WOOD, STYROFOAM, PLASTIC
		S 1	10-30/2	4"						
750	10.0									
		S 2	13-32-45	18"	FILL (VERY DENSE, BROWN AND GRAY SILTY SAND, SOME GRAVEL, DRY)		NA			WOOD, PLASTIC, STYROFOAM, WHITE CRYSTALS, PLASTIC
745	15.0									
		S 3	28-8-12	4"	FILL (MEDIUM DENSE TO DENSE, DARK BROWN, SILTY SAND, SOME GRAVEL, MOIST)					CARDBOARD, STYROFOAM COMPLETED SAMPLE WITH CUTTINGS
		S 3	18-32-19	2"						
740	20.0									
		S 4	35-50/1	0"	FILL (MEDIUM DENSE TO VERY DENSE, DARK GRAY, SILTY SAND, SOME GRAVEL, WET)					
		S 4	60-8-6	1"						
735	25.0									
		S 4	60-8-10	1"	FILL (MEDIUM DENSE, BLACK, SILTY SAND AND GRAVEL, WET)					WOOD IN SPOON, CARDBOARD AND STYROFOAM, SAMPLE FROM CUTTINGS
		S 5	20-13-14	2"						
731.81	28.0									
		S 5	13-12-15	7"	STIFF, BROWN, SILTY CLAY, MOIST, WET FROM 26.5 - 27.0'		cl			
					BOTTOM OF BORING 28.0'					

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN  
 BY A 140 LB HAMMER DROPPED 30"

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

PROJECT NO. 303558

BORING NO. SB-16

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-16-88 BORING NO. SB-17 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-16-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 756.03' N 9881.68' E 10128.85' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	REMARKS
755									
	5.0								
750		S 1	34-54- 109	11"	FILL (DENSE, LIGHT BROWN SAND WITH GRAVEL)				
	10.0								
745		S 2	3-5-6	7"	FILL (MEDIUM DENSE, RED, BROWN SAND WITH GRAVEL, TRACE CLAY)		NA		
	15.0								
740		S 3	3-10-11	8"	FILL (WET, BROWN FIBER, BLACK, SILTY CLAY, WET, STRONG ORGANIC VAPORS)				
	18.0'								
	20.0	S 6	NA	NA	GRAY CLAY		cl		CLAY AT 18', CLAY CUTTINGS TAKEN FOR SAMPLE S/6
735		S 4	5-10-12	9"	LIGHT BROWN, SANDY SILT		ml		
	25.0								
729.53	26.5	S 5	18-32-53	14"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL		sp		
					BOTTOM OF BORING 26.5'				

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. McCANN  
J. SWAN

PROJECT NO. 303558










BORING NO. SB-17

PROJECT NAME ARCO-MONACA

SHEET 1 of 1



DATE BEGAN 8-15-88 BORING NO. SB-18 FIELD ENGINEER J. TESORIERO  
DATE FINISHED 8-15-88 CHECKED BY C. PETERMAN  
GROUND SURFACE EL. 756.56' N 9781.56' E 10132.44' GWL DEPTH -  
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

BUREAU OF REVENUE					DATE TIME				
ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	PRO FILE	U. S. C. S.	C O N S I S T E N C Y	REMARKS
755									BLACK, SANDY SILT, CUTTINGS, FILL
	5.0								
750			8-15-5	8"	FILL (DARK GRAY, SILTY CLAY, PLASTICS)				
	10.0								
745			75-17	3"	FILL (BLACK, SANDY SILT WITH PLASTIC BEADS, PLASTIC SHEET, WOOD, ORGANIC ODOR)				
	15.0		2-0-0	9"	FILL (GRAY, RED, YELLOW, SILTY CLAY, ORGANIC ODOR)				
740			3-12-14	2"	FILL (RED, SILTY CLAY, ORGANIC ODOR)				
			12-21-20	5"	FILL (RED, SILTY CLAY, ORGANIC ODOR)				
	20.0				20.0'				
735			9-10-17	13"	LIGHT BROWN, SILTY CLAY				
	25.0				25.0'				
730.06	26.5		6-8-10	NA	LIGHT BROWN SANDY SILT		ml		
					BOTTOM OF BORING 26.5'				

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING  
 DRILLING EQUIPMENT MOBIL 80  
 DRILLERS J. McCANN  
 J. SWAN

AUGERED BELOW CLAY TO OBTAIN SAMPLE OF COARSER GRAINED  
SEDIMENT TO DETERMINE VERTICAL EXTENT OF CONTAMINATION.  
BENTONITE SLURRY FROM 26.5' TO 20'  
8 BAGS CEMENT, 150 LB BENTONITE

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-18

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-15-88 BORING NO. SB-19 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-16-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 759.55' N 9659.92' E 10120.07' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755	5.0	S 1	15-16-15	4"	FILL (DENSE, BROWN, SANDY SILT WITH SOME GRAVEL, DRY)	NA	NA			METAL, STYROFOAM
750	8.0	S 1	8-7-6	6"						
745	10.0	S 2	16-16-13	4"	FILL (MEDIUM DENSE, GRAY, SILTY SAND, SOME GRAVEL, DRY)					
740	13.0	S 2	13-10-6	6"						
735	15.0	S 3	100-40-39	16"	FILL (VERY DENSE, DARK GRAY SAND WITH SOME GRAVEL, TRACE SILT, MOIST)					
730	17.0	S 4	20-15-13	3"	FILL (MEDIUM DENSE, DARK GRAY SAND WITH SOME GRAVEL, TRACE SILT, MOIST, PREDOMINANTLY WOOD)					
730.05	20.0	S 4	17-17-11	12"		ml				WOOD, PLASTIC, STYROFOAM
	22.5	S 5	10-13-11	2"	FILL (WOOD, SOME WET SILT)					
	24.5	S 5	6-7-17	6"	SOFT, GRAY, CLAYEY SILT WITH SOME FINE SAND, MOIST)					
	26.5	S 6	7-7-9	5"						
	29.0				BOTTOM OF BORING 29.0'					

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING  
 DRILLING EQUIPMENT CME 75  
 DRILLERS R. WADDELL  
T. SWEARINGER

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON  
 DRIVEN BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

BORING NO. SB-19

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-16-88 BORING NO. SB-20 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-16-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 757.79' N 9560.83' E 10110.74' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755										
	5.0	S 1	6-4-5	12"	FILL (LOOSE, BROWN, SILTY, FINE SAND, TRACE GRAVEL, DRY)					PLASTIC, STYROFOAM BEADS
750										
	10.0	S 2	28-38-5 1/4	10"	FILL (VERY DENSE, BROWN, FINE, SILTY SAND, SOME GRAVEL, DRY)					WOOD, PAPER, LAYERS OF STYROFOAM, PLASTIC ABANDONED HOLE AT 12'-METAL
745										
	15.0	S 3	13-12-9	8"	FILL (HARD, BLACK TAR, STRONG ODOR)		NA			
740										
	20.0	S 4	7-3-3	12"	FILL (PLASTIC, BLACK TAR, STRONG ODOR)					
735										
	25.0	S 5	7-12-15	18"	FILL (PLASTIC, BLACK TAR, STRONG ODOR)					
731.29	26.5									
					STIFF, MOTTLED, GRAY, BROWN, SILTY CLAY, MOIST					NOTE: DIVIDED INTO 2 SAMPLES S5 (FILL) S6 (CLAY)
					BOTTOM OF BORING 26.5'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

PROJECT NAME ARCO-MONACA

BORING NO. SB-20

SHEET 1 of 1

DATE BEGAN 8-16-88 BORING NO. SB-21 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-16-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 755.87' N 9884.00' E 10226.86' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	T. S. F. C O N S I S T E N C Y	REMARKS
755									
	5.0	<del>S</del> 1	11-21-25	13"	DARK BROWN, SILTY SAND WITH GRAVEL		sm		
	10.0	<del>S</del> 2	4-4-4	7"	FINE, BLACK SAND, UNIFORM, GRAIN SIZE, CLAYEY, GRAY SAND WITH GRAVEL (BOTTOM 2")		sp		
745		<del>S</del> 4	NA	NA	LIGHT BROWN, SILTY CLAY WITH SOME SAND		cl		
	15.0	<del>S</del> 3	11-8-10	8"	LIGHT BROWN, CLAYEY SILT		ml		
739.37	16.5				MEDIUM DENSE, LIGHT BROWN SAND WITH GRAVEL		sp		
					BOTTOM OF BORING 16.5'				

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING  
 DRILLING EQUIPMENT MOBIL 80  
 DRILLERS J. SWAN  
J. McCANN

BORING COMPLETED AT 16.5' CLAY HORIZON AT ~ 12-14', BENTONITE PELLETS TO 12-16.5' (CANNOT BACKFILL WITH OUT PULLING AUGER, MAY LOSE HOLE) CEMENT BENTONITE GROUT 0-12'  
 2 BUCKETS BENTONITE 25 LBS

\*SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

BORING NO. SB-21

PROJECT NAME ARCO-MONACA

SHEET 1 of 1



DATE BEGAN 8-18-88 BORING NO. SB-22 FIELD ENGINEER J. TESORIERO  
DATE FINISHED 8-18-88 CHECKED BY C. PETERMAN  
GROUND SURFACE EL. 755.75' N 9800.73' E 10234.07' GWL DEPTH -  
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	PROFILE	U. S. C. S.	T. S. F. CONSISTENCY	REMARKS
755									WOOD, PLASTIC
	5.0	<del>S</del> 1	10-23-60	14"	FILL (GRAY SILT; BROWN, CLAYEY SAND WITH GRAVEL)				STRONG ODOR
	10.0	<del>S</del> 2	60-10-9	6"	FILL (BROWN, SILTY SAND WITH GRAVEL, TRACE RED CLAYEY MATERIAL)		NA		CUTTINGS USED FOR SAMPLE
	15.0	<del>S</del> 3	2-10-25	14"	FILL (RED, BROWN, YELLOW, CLAYEY SAND)				PAINT, STRONG ODOR ESPECIALLY IN CLAY
		<del>S</del> 5	NA	NA	FILL (BLACK, SILTY CLAY MATERIAL, PLASTIC MATERIAL) ----- 17.5'				CUTTINGS, STRONG ODOR WHEN BROKEN.
	20.0				GRAY CLAY ----- 19.0'		cl		
734.25	21.5	<del>S</del> 4	10-17-19	17"	LIGHT BROWN, CLAYEY SILT		ml		STRONG ODOR WHEN BROKEN
					BOTTOM OF BORING 21.5'				

**NOTES:**

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL

T. SWEARINGER

**BENTONITE PELLETS 16'-21.5'**

CEMENT BENTONITE GROUT 0'-16'

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

DATE BEGAN 8-17-88 BORING NO. SB-23 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-17-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 756.71' N 9692.37' E 10243.37' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

[illegible]

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

**BENTONITE PELLETS 17-26.5'**  
**CEMENT BENTONITE GROUT 0-17'**

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. SWAN  
J. McCANN

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-23

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN	<u>8-17-88</u>	BORING NO.	<u>SB-24</u>	FIELD ENGINEER	<u>S. TITUSKIN</u>
DATE FINISHED	<u>8-17-88</u>			CHECKED BY	<u>C. PETERMAN</u>
GROUND SURFACE EL.	<u>755.93'</u>	N	<u>9587.66'</u>	E	<u>10227.80'</u>
DRILLING METHOD	<u>4 1/4" ID HOLLOW STEM AUGER</u>			GWL DEPTH	<u>-</u>
				GWL DATE/TIME	<u>-</u>

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	PROFILE	U. S. C. S.	T. S. F. CONSISTENCY	REMARKS
755									
	5.0	<del>S</del> 1	7-5-4	12"	FILL (SOFT, BROWN, SANDY SILT, TRACE GRAVEL, DRY)				(SMALL, WHITE BEADS)
750									
	10.0	<del>S</del> 2	5-7-9	10"	FILL (MEDIUM DENSE, DARK BROWN, SILTY, FINE SAND WITH SOME GRAVEL, DRY)				STYROFOAM, CERAMICS
745							NA		
	15.0	<del>S</del> 3	8-8-10	8"	FILL (MEDIUM DENSE, DARK BROWN, SILTY, MEDIUM SAND WITH SOME GRAVEL, DRY)				
740		<del>S</del> 3	9-10-9	9"					
	20.0	<del>S</del> 4	13-14-10	6"	FILL (MEDIUM DENSE, BROWN SAND AND GRAVEL, WET)				
735		<del>S</del> 4	11-10-13	7"					
	23.5'								
	25.0								
729.43	26.5	<del>S</del> 5	10-4-6	18"	SOFT, GRAY, CLAYEY SILT, TRACE SAND, MOIST		cl		
					BOTTOM OF BORING 26.5'				

**NOTES:**










DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

DATE BEGAN 8-17-88 BORING NO. SB-25 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-17-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 755.39' N 9490.51' E 10231.71' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	T. S. F. C O N S I S T E N C Y	REMARKS
750	5.0		9-15-17	16"	FILL (DENSE, BROWN, SILTY SAND AND GRAVEL, SOME CLAY INTERMIXED, MOIST)		NA		STRONG ODOR
745	10.0		27-27-17	14"	FILL (VERY DENSE, BROWN, COARSE SAND AND GRAVEL, SOME CLAY INTERMIXED, WET AT 11.0')				
740	15.0		40-39-31	16"	FILL (VERY DENSE, BROWN, SILTY, COARSE SAND WITH SOME GRAVEL, MOIST)				
735	20.0		6-7-10	2"	FILL (DENSE, BROWN, COARSE SAND AND GRAVEL, WET)				
730	25.0		8-10-13	16"	STIFF, GRAYISH BROWN CLAY, TRACE SILT, MOIST				
			16-18-29	18"	STIFF, GRAY MOTTLED WITH BROWN CLAY, TRACE SILT, MOIST				
725	30.0				VERY DENSE, LIGHT BROWN, COARSE SAND AND GRAVEL, WET		gm		SLIGHT ODOR
723.89	31.5		38-39-22	18"					
					BOTTOM OF BORING 31.5				

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

\* SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON  
 DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-25

PROJECT NAME ARCO-MONACA

SHEET 1 of 1



DATE BEGAN 8-17-88 BORING NO. SB-26 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-17-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 755.08' N 9876.79' E 10342.95' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	REMARKS
750	5.0								
		S 1	7-6-11	15"	MEDIUM DENSE, BROWN, MEDIUM SAND WITH GRAVEL				
745	10.0								
		S 2	5-11-11	6"	MEDIUM DENSE, BROWN SAND WITH TRACE GRAVEL				
740	15.0								
		S 3	4-14-13	9"	MEDIUM DENSE, BROWN SAND WITH GRAVEL				
735	20.0								
		S 4	20-40-43	10"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL				
730	25.0								
728.58	26.5	S 5	45-72 100/3	6"	VERY DENSE, BROWN SAND AND GRAVEL				SOME OF SAMPLE TAKEN FROM AUGER BIT
					BOTTOM OF BORING 26.5'				

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. SWAN

J. McCANN

\* SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-26

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

FIELD ENGINEER J. TESORIERO

CHECKED BY C. PETERMAN

GWL DEPTH -

GWL DATE/TIME \_\_\_\_ - \_\_\_\_

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755										
	5.0						NA			
750		X S 1	14-18-32	16"	FILL (GRAY SILT TO LIGHT BROWN SANDY SILT)					
					----- 7.0'					
					GRAY CLAY ----- 8.0'		cl			CLAY CUTTINGS TAKEN FOR SAMPLING S4
	10.0									
745		X S 2	14-40-44	14"	VERY DENSE, BROWN, SILTY SAND WITH GRAVEL		sw			
	15.0									SOME OF SAMPLE S3 TAKEN FROM AUGER BIT
739.60	16.5	X S 3	28-44-40	3"	VERY DENSE, BROWN SAND WITH GRAVEL, WET		sp			
					BOTTOM OF BORING 16.5'					

NOTES:  
DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. McCANN  
J. SWAN

CONTINUED TO 15' TO DETERMINE IF CLAY LAYER EXISTS BELOW  
SAND AND GRAVEL  
BACKFILL 16.5-10', BENTONITE PELLETS 10-7, CEMENT BENTONITE  
GROUT TO SURFACE

\*SAMPLES TAKEN WITH 1.5' BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-27

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-17-88 BORING NO. SB-28 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-17-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 754.85' N 9680.88' E 10338.33' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (6 IN)	REC. (IN)	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
750	5.0				BROWN, SILTY SAND (5")		sm			
			18-11-09	9"	BROWN CLAY WITH TRACE SAND (3")		cl			
745	10.0				LIGHT BROWN SAND WITH GRAVEL (1")		sp			
			28-30-60	5"	BROWN, SILTY SAND WITH GRAVEL 11.5'		sm			
			60-51	9"	CLAYEY SAND WITH GRAVEL, MOIST 13.5'		sc			
740	15.0									
738.35	16.5		14-6-9	12"	BROWN, SILTY SAND WITH TRACE GRAVEL, DARK GRAY CLAY, PLASTIC		sm			
					BOTTOM OF BORING 16.5'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. SWAN  
J. McCANN

DID NOT PENETRATE CLAY, SINCE WE ARE NOT IN LANDFILL IT WOULD NOT PROVIDE INFORMATION ON WHETHER CONTAMINANTS HAVE GONE THROUGH CLAY

\*SAMPLES TAKEN WITH 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-28

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-18-88 BORING NO. SB-29 FIELD ENGINEER S. TITUSKIN  
DATE FINISHED 8-18-88 CHECKED BY C. PETERMAN  
GROUND SURFACE EL. 754.33' N 9569.12' E 10337.16' GWL DEPTH -  
DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	PRO FILE	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
750										
	5.0	S 1	10-31-31	15"	FILL (VERY DENSE, BROWN, SILTY, MEDIUM SAND WITH SOME GRAVEL AND COBBLES, INTERMIXED WITH CLAY, MOIST)					
745										
	10.0	S 2	23-28-25	16"	FILL (VERY DENSE, BROWN, SILTY, COARSE SAND WITH SOME GRAVEL, INTERMIXED POCKETS OF SILTY CLAY, MOIST)					
740										
	15.0	S 3	13-24-33	6"	FILL (VERY DENSE, BROWN, SANDY SILT WITH SOME GRAVEL, MOIST)					
		S 3	31-36	16"						
735										
	20.0				----- 19.0'					
732.83	21.5	S 4	7-0-3	18"	SOFT, GRAY, MOTTLED BROWN, CLAY SILT, TRACE SAND, MOIST		ml			
					BOTTOM OF BORING 21.5					

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING  
 DRILLING EQUIPMENT CME 75  
 DRILLERS R. WADDELL  
 T. SWEARINGER

\*SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON  
DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-29

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

SHEET 1 of 1



DATE BEGAN 8-18-88 BORING NO. SB-31 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-18-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 755.31' N 9524.27' E 10412.40' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	PRO- FILE	U. S. C. S.	CON- SISTENCY	T. S. F.	REMARKS
750	5.0	S 1	15-23-17	2"	FILL (VERY DENSE, BROWN, FINE, SILTY SAND WITH SOME GRAVEL AND COBBLES, MOIST)					
		S 1	17-20-22	12"						
745	10.0	S 2	12-12-12	16"	FILL (VERY DENSE, BROWN, COARSE, SILTY SAND WITH SOME COBBLES, INTERMIXED CLAY, MOIST)			NA		
740	15.0	S 3	21-20-17	15"	FILL (DENSE, COARSE SAND AND GRAVEL, TRACE SILT, COBBLES, WET)					
735	20.0	S 4			SOFT, GRAY, SILTY CLAY, TRACE GRAVEL AND SAND, MOIST			cl		NOTE: SAMPLE S4 COLLECTED FROM AUGERS FROM 18' TO 20'
		S 4	20-12-25	3"						
732.31	23.0	S 4	24-28-16	0"	DENSE, COARSE SAND AND GRAVEL, SOME SILT, WET			gm		
					BOTTOM OF BORING 23.0'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL

T. SWEARINGER

\* SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN  
BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

PROJECT NAME ARCO-MONACA

BORING NO. SB-31

SHEET 1 of 1

DATE BEGAN 8-11-88 BORING NO. SB-32 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-11-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 755.39' N 10104.31' E 9915.14' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	*SPT BLOWS PER (5 IN)	REC. (IN)	DESCRIPTION	PRO- FILE	U. S. C. S.	CON- SIS- TENCY	REMARKS
750	5.0	<del>S</del> 1	11-10-12	9"	MEDIUM DENSE, BROWN SAND WITH GRAVEL				
745	10.0	<del>S</del> 2	10-91-18	6"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL				
		<del>S</del> 2	58-11-12	11"	MEDIUM DENSE, LIGHT BROWN SAND AND GRAVEL				
740	15.0	<del>S</del> 3	26-31-33	17"	VERY DENSE, MEDIUM TO COARSE SAND WITH GRAVEL				
735	20.0	<del>S</del> 4	13-28-44	17"	VERY DENSE LIGHT BROWN SAND AND GRAVEL				
730	25.0	<del>S</del> 5	57-62-89	17"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL, TRACE BLACK CLAYEY MATERIAL.				
728.89	26.5								
					BOTTOM OF BORING 26.5'				

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS E. DYE - M. REBOLD - T. STEWART

\* SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30".

COULD NOT CONTINUE DRILLING PAST 25' SINCE HOLE WENT IN AT AN ANGLE DUE TO GRAVEL

PROJECT NO. 303558

BORING NO. SB-32

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-15-88 BORING NO. SB-33 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-15-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 756.14' N 9965.22' E 10077.15' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755										
	5.0	<del>S</del> 1	19-24-28	<1"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL					
750		<del>S</del> 1	12-15-22	14"	DENSE, LIGHT BROWN SAND AND GRAVEL					
	10.0	<del>S</del> 2	33-41-50	16"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL		sp			
745		<del>S</del> 3	21-34-36	16"	VERY DENSE, LIGHT BROWN SAND AND GRAVEL					
	15.0	<del>S</del> 4	21-33-50	16"	VERY DENSE, BROWN SAND AND GRAVEL					
740		<del>S</del> 5	17-44-32	6"	VERY DENSE, BROWN, SILTY SAND WITH GRAVEL, WET		sm			
	20.0	<del>S</del> 5	40-54-50	12"	VERY DENSE, BROWN SAND WITH GRAVEL		sp			
735		<del>S</del> 6	15-30-48	<1"	VERY DENSE SAND AND GRAVEL					SAMPLE TAKEN FROM AUGER
730										
	25.0									
724.64	31.5									
					BOTTOM OF BORING 31.5					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT MOBIL 80

DRILLERS J. McCANN  
J. SWAN

\* SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON  
 DRIVEN BY A 140 LB HAMMER DROPPED 30".

PROJECT NO. 303558

BORING NO. SB-33

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-18-88 BORING NO. SB-34 FIELD ENGINEER J. TESORIERO  
 DATE FINISHED 8-19-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 757.35' N 9818.91' E 9686.98' GWL DEPTH -  
 DRILLING METHOD 4 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME -

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER (6 IN)	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	REMARKS
755									
	5.0								
750		S 1	16-20-45	16"	FILL (GRAY SILT WITH PLASTIC BEADS, HARD, BLACK PLASTIC PIECES, WHITE FOAM MATERIAL)				STRONG ODOR
	10.0								
745		S 1	17-7-11	5"	FILL (DARK GRAY, SILTY SAND WITH CLEAR THIN PLASTIC, STYROFOAM PIECES)				CUTTINGS USED FOR SAMPLE S2 STRONG ODOR
	15.0							NA	
740		S 3	3-15-12	3"	FILL (GRAY, SILTY SAND WITH HARD, WHITE PLASTIC, WOOD PIECES)				STRONG ODOR CUTTINGS USED
		S 3	63/4	2"					
	20.0								
735		S 4	85/3	3"	FILL (BLACK, SILTY SAND WITH TRACE GRAVEL, PLASTIC BEADS, SMALL PIECES OF STYROFOAM, OILY SHEEN, WET)				VERY STRONG ODOR CUTTINGS USED
	25.0								
730		S 5	13-20-19		FILL (GRAY SLURRY WITH PLASTIC BEADS)				
		S 5	13-15-12		GRAY CLAY				
	30.0							cl	CLAY TAKEN FROM AUGER FOR S8
725		S 7	10-15-30		GRAY CLAY WITH BROWN SILT CLAYEY SAND WITH TRACE GRAVEL				
		S 6	8-18-50	3"	BROWN, SILTY SAND				CLAY FROM ABOVE FILLED PART OF SPOON USED 33.5' TO 35.0' FOR SAMPLE.
722.35	35.0	S 6	19-27-17	7"	SILTY SAND WITH TRACE GRAVEL, MEDIUM TO COARSE SAND			sm	
					BOTTOM OF BORING 35.0'				

NOTES:  
 DRILLING CONTRACTOR PENNSYLVANIA DRILLING  
 DRILLING EQUIPMENT CME 75  
 DRILLERS R. WADDELL  
T. SWEARINGER

\*SAMPLES TAKEN WITH A 1.5' LONG BY 3" OD SPLIT SPOON DRIVEN BY A 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

BORING NO. SB-34

PROJECT NAME ARCO-MONACA

SHEET 1 of 1

DATE BEGAN 8-22-88 BORING NO. MWIT-1 FIELD ENGINEER S. TITUSKIN  
 DATE FINISHED 8-22-88 CHECKED BY C. PETERMAN  
 GROUND SURFACE EL. 759.89' N 9622.86' E 10029.02' GWL DEPTH 24.5'  
 DRILLING METHOD 6 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME 8-22-88

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755	5.0				FILL (DARK BROWN, SILTY SAND, SOME GRAVEL, MOIST)	NA				STYROFOAM BEADS, CARDBOARD, METAL (3' TO 12')
750	10.0				FILL (DARK GRAY, COARSE SAND, TRACE SILT, MOIST)					METAL AT 12'
745	15.0				FILL (DARK GRAY, MEDIUM SAND, TRACE SILT, MOIST)					STYROFOAM BEADS, CARDBOARD SHEETS OF PLASTIC (17' TO 19')
740	20.0				FILL (DARK, MEDIUM SAND WITH TAR, STRONG ODOR)					METAL AT 21', CARDBOARD, CHUNKS OF PLASTIC AND WOOD (21' TO 23')
8-22-88	25.0				25.0'					
733.39	26.5	S 1	6-7-5	17"	SOFT, DARK BROWN, MOTTLED WITH GRAY CLAY, SILT, MOIST		cl			
					BOTTOM OF BORING 26.5'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

LOGGED FROM CUTTINGS EXCEPT WHERE SAMPLES INDICATED  
 \* SAMPLE COLLECTED USING 1" OD 18" LONG SPLIT SPOON  
 SAMPLES DRIVEN USING 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558




PROJECT NAME ARCO-MONACA

BORING NO. MWIT-1

SHEET 1 of 1



DATE BEGAN 8-22-88 BORING NO. MWIT-2 FIELD ENGINEER S. TITUSKIN  
DATE FINISHED 8-23-88 CHECKED BY C. PETERMAN  
GROUND SURFACE EL. 757.12' N 9830.60' E 9685.14' GWL DEPTH 24.0'  
DRILLING METHOD 6 1/4" ID HOLLOW STEM AUGER GWL DATE/TIME 8-23-88

ELEV (FEET)	DEPTH (FEET)	SAMPLE TYPE AND NO.	* SPT BLOWS PER ( 6 IN )	REC. ( IN )	DESCRIPTION	P R O F I L E	U. S. C. S.	C O N S I S T E N C Y	T. S. F.	REMARKS
755					FILL (BLACK, FINE SILTY SAND, MOIST)		NA			PLASTIC SHEETS
	5.0				FILL (DARK GRAY, CLAYEY SILT, TRACE SAND, GRAVEL, MOIST)					
750					FILL (DARK GRAY, CLAYEY SILT, SOME SAND, TRACE GRAVEL, (PREDOMINANTLY CARDBOARD AND PLASTIC), MOIST) SAND, TRACE SILT, MOIST)					
	10.0				FILL (DARK GRAY, CLAYEY SILT, SOME SAND, TRACE GRAVEL, MOIST)					
745					FILL (DARK GRAY, CLAYEY SILT, SOME SAND, TRACE GRAVEL, MOIST)					
	15.0				FILL (DARK GRAY, SILTY SAND, TRACE GRAVEL, MOIST)					
740					FILL (DARK GRAY, SILTY SAND, TRACE GRAVEL, WET)					
	20.0									
735										
8-23-88										
	25.0									
730.62	26.5			16"	STIFF, GRAY, SILTY CLAY, TRACE SAND, MOIST		cl			
					BOTTOM OF BORING 26.5'					

NOTES:

DRILLING CONTRACTOR PENNSYLVANIA DRILLING

DRILLING EQUIPMENT CME 75

DRILLERS R. WADDELL  
T. SWEARINGER

LOGGED FROM CUTTINGS EXCEPT WHERE SAMPLES INDICATED  
\* SAMPLE COLLECTED USING 1" OD 18" LONG SPLIT SPOON  
SAMPLES DRIVEN USING 140 LB HAMMER DROPPED 30"

PROJECT NO. 303558

BORING NO. MWIT-2

PROJECT NAME ARCO MONACA

SHEET 1 of 1